Claims

What is claimed:

1. A knitted catalyst gauze comprised of weft threads.

2. A knitted catalyst gauze according to claim 1, further comprising at least two mesh layers, wherein said weft threads are located between said mesh layers.

3. A knitted catalyst gauze according to claim 1, wherein said weft threads are comprised of noble metal wires.

4. A catalyst gauze comprised of:

   a. a plurality of mesh layers;

   b. pile threads, wherein said pile threads join at least two mesh layers to each other; and

   c. weft threads, wherein said weft threads are located between at least two mesh layers that are joined by said pile threads.

5. A catalyst gauze according to claim 4, wherein the weft threads are inserted between the mesh layers in more than one plane.

6. A catalyst gauze according to claim 4, wherein the weft threads are arranged approximately centrally between two mesh layers.

7. A catalyst gauze according to claim 4, wherein the weft threads are arranged approximately parallel to one another and are aligned in their direction perpendicular to the direction of the meshes in the mesh layers.

8. A catalyst gauze according to claim 4, wherein the weft threads are inserted into the pile threads.

9. A catalyst gauze according to claim 4, wherein the mesh threads have wire diameters of from about 0.06 to about 0.092 mm, the pile threads have wire diameters of from about 0.06 to about 0.092 mm and the weft threads have wire diameters of from about 0.06 to about 0.092 mm.

10. A catalyst gauze according to claim 4, wherein up to ten pile threads per mesh are present and the pile threads are aligned at an angle of from 0 to 50° to the direction of flow of the reaction gases.

11. A catalyst gauze according to claim 4, in which the thickness of two mesh layers is from about 1.0 to about 3.0 mm and the weight per unit area is from about 1000 to about 3000 g/m^2.

12. A catalyst gauze according to claim 4, wherein the mesh layers are comprised of mesh threads and the mesh threads are comprised of a platinum-rhodium alloy with 4 wt.% to 12 wt.% rhodium or a platinum-palladium-rhodium alloy with 4 wt.% to 12 wt.% palladium and rhodium.

13. A catalyst gauze according to claim 4, wherein the pile threads are comprised of a platinum-rhodium alloy with 4 wt.% to 12 wt.% rhodium or a platinum-palladium-rhodium alloy with 4 wt.% to 12 wt.% palladium and rhodium.

14. A catalyst gauze according to claim 4, wherein the weft threads are comprised of a platinum-rhodium alloy with 4 wt.% to 12 wt.% rhodium or a platinum-palladium-rhodium alloy with 4 wt.% to 12 wt.% palladium and rhodium.

15. A process for the production of three-dimensional catalyst gauzes comprising knitting noble metal wires in two or more layers, on flat bed knitting machines, wherein a weft thread guide is run between a mesh thread guide and a pile thread guide.

16. A process according to claim 15, wherein said wires have a diameter of from about 0.05 mm to about 0.120 mm, a tensile strength of from about 900 N/mm^2 to 1050 N/mm^2 and an elongation limit of from about 0.5 % to about 3%.

17. A process according to claim 15, wherein on the flat bed knitting machines are settings between 3.63 and 1.81 mm with respect to gauge and between 2 and 6 mm for the mesh length.

18. A method for using the catalyst gauze of claim 1, comprising carrying out heterogeneously catalyzed gas reactions.

19. A method for using the catalyst gauze of claim 1, comprising oxidizing ammonia with atmospheric oxygen to produce nitric acid in the presence of said catalyst gauze.

20. A method for using the catalyst gauze of claim 1, comprising reacting ammonia with methane in the presence of oxygen to produce hydrocyanic acid in the presence of said catalyst gauze.